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STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

GEOHERMAL RESOURCES MINING LEASE NO. R-3

between

STATE OF HAWAII

and

BARNWELL GEOTHERMAL CORPORATION,  
a Hawaii corporation

(Geothermal Lease-May, 1981)

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
GEOTHERMAL RESOURCES MINING LEASE

TABLE OF CONTENTS

	<u>Page No.</u>
1. LEASE.....	1
2. RESERVATIONS TO LESSOR.....	3
A. Disposal.....	3
B. Rights-of-Way.....	3
C. Certain Mineral Rights.....	4
D. Casing.....	4
E. Measurements.....	4
3. TERM.....	4
A. Primary Term, Extended Term, Maximum Term....	4
B. Extension of Lease Beyond Primary Term by Drilling Operations.....	5
C. Shut-in Production.....	5
D. Drilling or Reworking Operations After Cessation of Production.....	6
4. RENTALS.....	6
A. Amount and Time of Payment.....	6
B. Credits Against Royalties.....	7
5. ROYALTIES.....	7
A. For Period of Initial Thirty-Five Years.....	7
B. Readjustment After Thirty-Five Years.....	8
C. Deadline for Royalty Payments.....	8
D. Royalties-Production (Absolute Open-Flow Potential).....	9
E. Geothermal By-Products Testing.....	10
F. Interest and Penalties.....	10

## Table of Contents (cont'd)

Page No.

6.	REQUIREMENT TO COMMENCE MINING OPERATIONS.....	11
7.	TAXES.....	12
	A. Real Property Taxes.....	12
	B. Other Taxes.....	12
8.	UTILITY SERVICES.....	13
9.	SANITATION.....	13
10.	WASTE: USE OF PREMISES.....	13
11.	COMPLIANCE WITH LAWS.....	14
12.	INSPECTION OF PREMISES AND RECORDS.....	15
13.	GEO THERMAL OPERATIONS.....	16
	A. Removal of Derrick.....	16
	B. Operating Sites.....	16
	C. Site Selection.....	16
	D. Drilling Operations.....	17
	E. Water Quality - Waste Disposal.....	17
	F. Fish and Game Notice - Intererence.....	18
	G. Damage to Terrain.....	18
	H. Pollution.....	18
	I. Filled Lands.....	19
	J. Road Maintenance.....	20
	K. Timber Damaged.....	21
	L. Improvements - Protection from Damage.....	21
	M. Damages - Payment.....	21
	N. Damages to Surface or Condition of Land.....	21
	O. Power Plants.....	22
	P. Agreement with Surface Owner.....	23
	Q. Drilling Mud.....	23
	R. Facility Sites.....	24
	S. Construction of Terms.....	24
	T. Spacing, Production, Etc.....	24

# Table of Contents (cont'd)

## Page No.

U. Drilling - Notice - Plan.....	25
V. Drilling, Etc. - Circulating Medium.....	25
W. Generating Plants - Approval.....	25
14. LIENS.....	26
15. ASSIGNMENT OF SUBLEASE.....	26
16. INDEMNITY.....	27
17. LIABILITY INSURANCE.....	28
18. BOND REQUIREMENTS.....	29
19. REVOCATION.....	30
20. SURRENDER.....	31
21. ACCEPTANCE OF RENT AND ROYALTIES NOT A WAIVER...	33
22. EXTENSION OF TIME OF PERFORMANCE.....	33
23. NO WARRANTY OF TITLE.....	34
24. COMMINGLED PRODUCTION - PLANS - APPROVAL - ACCURACY.....	35
25. SUSPENSION OF OPERATIONS.....	36
26. DILIGENT OPERATIONS REQUIRED.....	37
27. PRODUCTION OF BY-PRODUCTS.....	37
28. RECORDS AND REPORTS.....	38
29. FORCE MAJEURE.....	40
30. UNIT OR COOPERATIVE PLANS.....	41
31. NOTICES.....	41
32. RESTORATION OF PREMISES.....	42
33. HEADINGS.....	42
34. REFERENCE.....	42
35. INSOLVENCY.....	42
36. SUBSIDENCE.....	43
37. WORKMEN'S COMPENSATION INSURANCE.....	43
38. SUCCESSORS.....	43

Table of Contents (cont'd)

Page No.

39. SEVERABILITY.....	44
40. GEOTHERMAL OWNERSHIP.....	44
41. LEASE TERMS V. REGULATION 8.....	44
42. APPLICABILITY OF LEASE.....	44

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
GEOTHERMAL RESOURCES MINING LEASE NO. R-3

THIS INDENTURE OF LEASE, made this 10<sup>th</sup> day of August, 1981, pursuant to Chapter 182, Hawaii Revised Statutes, and the rules and regulations promulgated thereunder, by and between the STATE OF HAWAII, by its Board of Land and Natural Resources, hereinafter called the "Lessor", and BARNWELL GEOTHERMAL CORPORATION,  
a Hawaii corporation, whose business and post office address is 2828 Paa Street, Suite 2085,  
Honolulu, Hawaii 96819,  
hereinafter called the "Lessee",

W I T N E S S E T H:

1. LEASE

Subject to the provisions of paragraph 23 entitled "No Warranty of Title", Lessor, in consideration of the royalties, rental, and other monetary considerations, agreements and stipulations herein contained, does hereby lease unto the Lessee the right to develop geothermal resources and geothermal by-products in and under that certain parcel of land, hereinafter designated as the "leased lands", identified in Exhibit "A" containing approximately 769.13 acres situated at Puna, Hawaii, as shown on the maps marked Exhibits "B-1", "B-2", "B-3", "B-4" and "B-5", which exhibits are attached and made a part hereof.

The Lessee shall have the sole and exclusive right to drill for, produce and take geothermal resources from the leased lands and occupy and use so much of the surface of

the leased lands as may be reasonably required pursuant to the provisions of section 182-3 of the Hawaii Revised Statutes and section 6.1 of the regulations. Lessee agrees to comply with these provisions and to save and hold the Lessor harmless with respect to the claims made under said statute and regulations by the owners and occupiers of the surface of the leased lands. This Lease does include the right to reinject beneath the leased lands geothermal fluids subject to the prior written approval of the Lessor and upon such terms and conditions as the Lessor considers to be in the public interest and include any other right as may be necessary to produce the geothermal resources. This Lease does not confer upon the Lessee the privilege or right to store hydrocarbon gas beneath the leased lands; nor does this Lease confer upon the Lessee any other privilege or right not expressly given herein.

This Lease is entered into with the agreement that its purposes are and its administration shall be consistent with the principle of multiple use of public lands and resources; this Lease shall allow co-existence of other permits or leases of the same lands for deposits of other minerals under applicable laws, and the existence of this Lease shall not preclude other uses of the leased lands. However, operations under such other permits or leases or other such uses shall not unreasonably interfere with or endanger operations under this Lease, nor shall operations under this Lease unreasonably interfere with or endanger operations under any permit, lease, or other entitlement for use issued or held pursuant to the provisions of any other law. Nor shall this Lease be construed as superseding the authority which the head of any State department or agency

has with respect to the management, protection, and utilization of the State lands and resources under his jurisdiction. The State may prescribe in its rules and regulations those conditions it deems necessary for the protection of resources.

2. RESERVATION TO LESSOR

All rights in the leased lands not granted to the Lessee by this Lease are hereby reserved to the Lessor. Without limiting the generality of the foregoing such reserved rights include:

A. Disposal - If the State owns the surface of the land, the right to sell or otherwise dispose of the surface of the leased lands owned by the State or to sell or dispose of any other resource in the leased lands under existing laws, or laws hereafter enacted subject to the rights of the Lessee under this Lease. Nothing provided herein shall be construed to authorize or provide for the sale or disposition of the surface of reserved or other privately owned lands.

B. Rights-of-way - The right to authorize geological and geophysical explorations on the leased lands which do not interfere with or endanger present operations or reasonable prospective operations under this Lease, and if the State owns the surface of the land the right to grant such easements or rights-of-way for joint or several use upon, through or in the leased lands for steam lines and other public or private purposes which do not interfere with or endanger present operations or reasonable prospective operations or facilities constructed under this Lease. Nothing provided herein shall be construed as a grant or the



right to grant an easement or right-of-way upon reserved or other privately owned lands.

C. Certain Mineral Rights - The right to extract at its sole cost and expense and own oil, hydrocarbon gas, and helium from all geothermal steam and associated geothermal resources produced from the leased lands; provided, however that such extraction and ownership rights shall be exercised by Lessor in such manner as will not unduly interfere with the rights of Lessee under this Lease.

D. Casing - If the State owns the surface of the land, the right to acquire the well and casing when the Lessee finds only potable water, and such water is not required in lease operations; and

E. Measurements - The right to measure geothermal resources and to sample any production thereof.

### 3. TERM

#### A. Primary Term, Extended Term, Maximum Term

This Lease shall be for a term of ten (10) years from and after the effective date of this Lease pursuant to Rule 3.11 of the Regulations, (hereinafter referred to as the "primary term"), and for so long thereafter as geothermal resources are produced or utilized in commercial quantities, provided that the maximum term of this Lease shall not exceed sixty-five (65) years; provided, however, that if the primary term or the maximum term for geothermal leases should be extended by statute, retroactively, such extended terms shall be applicable to this Lease, or should said terms be extended generally by statute, such extended terms may be made applicable to this Lease upon such other terms and conditions as the Board may determine. Production or uti-

lization of geothermal resources in commercial quantities shall be deemed to include the completion of one or more wells capable of producing geothermal resources for delivery to or utilization by a facility or facilities not yet installed but scheduled for installation not later than fifteen (15) years from the date of commencement of the primary term of this Lease.

B. Extension of Lease Beyond Primary Term by Drilling Operations

If at the expiration of the primary term hereof geothermal resources in commercial quantities are not being produced from the leased lands, but the Lessee is actively engaged in drilling operations designed to drill below the depth of 1,000 feet, or, to a production zone at a lesser depth in a diligent manner, this Lease shall be continued for so long thereafter as such operations are continued with no cessation thereof for more than 180 days, but not to exceed a period of five (5) years, and if such drilling operations are successful, as long thereafter as geothermal resources are being produced or utilized in commercial quantities except for the sixty-five (65) year limit provided above.

C. Shut-in Production

If the Lessee has voluntarily shut-in production for lack of a market, but is proceeding diligently to acquire a contract to sell or to utilize the production or is progressing with installations needed for production, this Lease shall continue in force upon payment of rentals for the duration of the primary term or for five (5) years after shut-in, whichever is longer. The Chairman shall continue to review this Lease every five (5) years until production

in commercial quantities occurs or this Lease is terminated by Lessor for Lessee's lack of due diligence or is surrendered by the Lessee. When production and sale or utilization of geothermal resources in commercial quantities has been established, the term of this Lease shall continue as provided in Paragraph A of this paragraph 3.

D. Drilling or Reworking Operations After Cessation of Production

If production of geothermal resources should cease by reason of a decline in the productive capacity of existing wells after expiration of the primary term, or before the end of the primary term if production has commenced, this Lease shall continue so long as Lessee actively and continuously engages in drilling or reworking operations which shall be commenced within One Hundred Eighty (180) days after cessation of production. Continuous drilling or reworking operations shall be deemed to have occurred where not more than One Hundred Eighty (180) days elapse between cessation of operations on one well and commencement of operations on the same or another well. If such operations are continued and if they are successful, this Lease shall continue as long thereafter as geothermal resources are being produced in commercial quantities, except for the sixty-five (65) year limit provided above.

4. RENTALS

A. Amount and Time of Payment

The first year's annual rent shall be paid pursuant to Rule 3.12. Thereafter, Lessee shall pay to Lessor at the Department, in advance each year on or before the anniversary date hereof, the annual rental of ONE AND NO/100----  
----- DOLLARS (\$ 1.00-----)

per acre or fraction thereof, on the leased lands during the life of this Lease, or a total of \$770.00 per annum.

B. Credits Against Royalties

The annual rental due and paid for each year shall be credited against any production royalties due and accrued during the same year. Annual rentals paid for a given year shall not be credited against production royalties due in future years.

5. ROYALTIES

A. For Period of Initial Thirty-five Years

For the primary ten (10) year term and during the first twenty-five (25) years thereafter Lessee shall pay to Lessor the following royalties on production measured and computed in accordance with the regulations:

1. Geothermal Resources (Excluding Geothermal By-products)

A royalty of ten (10%) percent of the gross proceeds received by the Lessee from the sale or use of geothermal resources produced from the leased lands and measured at the wellhead without any deduction for treating, processing and transportation cost, notwithstanding Rule 3.13b. of Regulation 8.

2. Geothermal By-Products

Five (5%) percent of the gross proceeds received by the Lessee from the sale of any such by-product produced under this Lease, including demineralized or desalted water, after deducting the treating, processing and transportation costs incurred.

In the event that geothermal resources hereunder is not sold to a third party but is used or furnished to a plant owned or controlled by the Lessee, the gross proceeds of such production for the purposes of computing royalties hereunder shall be that which is reasonably equal to the gross proceeds being paid to other geothermal producers for geothermal resources of like quality under similar conditions

without deducting any treating, processing and transportation costs incurred, notwithstanding Rule 3.13b. of Regulation 8.

No payment of royalty will be required on water if it is used in plant operation for cooling or generation of electric energy or is reinjected into the sub-surface. No royalty shall be paid for geothermal by-products used or consumed by Lessee in his production operations.

Gross proceeds shall not be deemed to include excise, production, severance or sales taxes or other taxes imposed on the Lessee by reason of the production, severance or sale of geothermal resources or geothermal by-products.

**B. Readjustment After Thirty-five Years**

Royalty rates on geothermal resources and geothermal by-products shall be readjusted, subject to the limitations specified in the regulations and in accordance with the procedures prescribed therein at the expiration of the thirty-fifth (35th) and fiftieth (50th) years of the Lease; provided, however, that such readjustment shall be only as to the royalty rate and not as to the basis for determining payment to the Lessor.

If the royalty rates for any ensuing period have not been determined prior to the expiration of the preceding period, the Lessee shall continue to pay the royalty rates effective for the previous period, but the Lessee shall, within thirty (30) days after the new royalty rates have been so determined, pay the deficiency, if any.

**C. Deadline for Royalty Payments**

The Lessee shall make payments of royalties to the Lessor within thirty (30) days after the end of each calendar month following such production and accompany such payment

with a certified true and correct written statement by the Lessee, showing the amount of geothermal resource and geothermal by-product produced, sold, used and/or otherwise disposed of and the basis for computation and determination of royalties. The Lessee shall furnish such other data as may be necessary to enable the Lessor to audit and verify all royalties due and payable to the Lessor.

D. Royalties-Production (absolute open flow potential)

If the Lessee supplies steam to any electrical generating facility from wells on both the leased lands and other lands and there is producible from all such wells in aggregate a quantity of steam greater than the maximum quantity utilizable by said electrical generating facility, Lessee agrees to produce and sell or use steam from the leased lands in a proportion no less than the proportion that the absolute open flow potential (the absolute open flow potential as used herein is the rate of flow in pounds of steam per hour that would be produced by a well if the only pressure against the face of the producing formation in the well bore were atmospheric pressure) of the wells on the leased lands bears to the total absolute open flow potential of all such wells from which Lessee supplies steam to such electrical generating facility. For purposes of this section it shall be deemed that the Lessee supplies steam from a well to an electrical generating facility when such well is capable of producing geothermal resources in commercial quantities to such facility. The absolute open flow potential of all such wells whether on the leased lands or other lands shall be determined by the Lessor and shall be based upon tests performed by the Lessee as prescribed by the Lessor. In this regard, Lessee shall,

upon completion of each of such wells, and prior to the placing of such wells on commercial production, perform, and deliver to the Lessor the results of, the following tests:

1. Pressure Test - Pressure-buildup tests to determine static reservoir pressure and well bore conditions. If pressure-buildup tests are based on shut-in wellhead data, then static well bore temperature surveys must also be conducted:

2. Isochronal Flow Tests - Isochronal flow tests or two rate flow tests to establish a back pressure curve and the absolute open flow potential;

3. Other Tests-Static Reservoir Pressure - Other tests as deemed to be necessary by the Lessor.

After commencement of commercial production from each of such wells, Lessee shall annually, or more frequently if requested by the Lessor, determine static reservoir pressure and complete any other tests as specified by the Lessor.

#### E. Geothermal By-Products Testing

The Lessee shall furnish the Chairman the results of periodic tests showing the content of by-products in the produced geothermal resources. Such tests shall be taken as specified by the Chairman and by the method of testing approved by him, except that tests not consistent with industry practice shall be conducted at the expense of the Lessor.

#### F. Interest and Penalties

1. Interest - It is agreed by the parties hereto that any royalties, rentals, or other monetary considerations arising under the provisions of this Lease and not paid when due as provided in this Lease, shall bear interest from the

day on which such royalties, rentals, or other monetary consideration were due at the rate of 12% per annum or such higher rates as may be permitted by law until such royalties, rentals, or other monetary considerations shall be paid to the Lessor.

2. Penalty - It is agreed by the parties hereto that any royalties, rentals or other monetary considerations arising under the provisions of this Lease and not paid when due as provided in this Lease, shall be subject to a five (5%) percent penalty on the amount of any such royalties, rentals, percentage of net profits, or other monetary considerations arising under the provisions of this Lease.

3. Definition of Royalties, etc. - It is agreed by the parties hereto that, for the purpose of this section, "royalties, rentals or other monetary considerations arising under the provisions of this Lease and not paid when due" includes but is not limited to any amounts determined by the Lessor to have been due to the Lessor if, in the judgment of the Lessor, an audit by the Lessor of the accounting statement required by paragraph 28 below shows that inaccurate, unreasonable or inapplicable information contained or utilized in the statement resulted in the computation and payment to the Lessor of less royalties, rentals, or other monetary considerations than actually were due to the Lessor.

6. REQUIREMENT TO COMMENCE MINING OPERATIONS

Lessee shall commence mining operations upon the leased lands within three years from the effective date of this Lease, excluding any research period which has been granted; provided, that so long as the Lessee is actively



and on a substantial scale engaged in mining operations on at least one geothermal resources mining lease, the covenant to commence mining operations shall be suspended as to all other leases held by the Lessee, covering lands on the same island.

7. TAXES

A. Real Property Taxes

Lessee shall pay any real property taxes levied on that portion of the surface of the leased lands utilized by Lessee, according to the value allocated thereto by Lessor or other appropriate State or County agency based on the use of the surface of the portion of the land by Lessee and the use of the remainder of the land by others entitled thereto. Lessee shall also pay any real property taxes levied on the structures and improvements placed thereon and utilized by Lessee; provided that all subsurface rights and any geothermal resources underlying the leased lands under this Lease shall be deemed to have only nominal value for real property tax assessment purposes until such time, if any, as specifically authorized by law. If Lessor has exercised its rights under paragraph 2 herein, said taxes shall be prorated according to Lessee's interests.

B. Other Taxes

Royalties paid hereunder shall be in lieu of any severance or other similar tax on the extracting, producing, winning, beneficiating, handling, storage, treating or transporting of geothermal resources or any product into which the same may be processed in the State of Hawaii; nevertheless, if any such tax should be assessed, then such tax shall be deducted from any royalties otherwise due here-

under. As to any and all other taxes of any nature assessed upon geothermal resources or geothermal by-products therefrom or assessed on account of the production or sale of geothermal resources or geothermal by-products from the leased land, Lessor and Lessee each shall bear such tax in proportion to its respective fractional share of the value of such production.

8. UTILITY SERVICE

Lessee shall be responsible for all charges, duties and rates of every description, including water, electricity, sewer, gas, refuse collection or any other charges, arising out of or in connection with Lessee's operations hereunder.

9. SANITATION

Lessee shall keep its operations and improvements in a strictly clean, sanitary and orderly condition.

10. WASTE: USE OF PREMISES

a. Lessee shall not commit, suffer or permit to be committed any waste, nuisance, strip mining or unlawful use of the leased lands or any part thereof.

b. Negligence - Breach - Non-Compliance - Lessee shall use all reasonable precautions to prevent waste of, damage to, or loss of natural resources including but not limited to gasses, hydrocarbons and geothermal resources, or reservoir energy on or in the leased lands, and shall be liable to the Lessor for any such waste, damage or loss to the extent that such waste, damage, or loss is caused by (1) the negligence of Lessee, its employees, servants, agents or contractors; (2) the breach of any provision of this Lease by Lessee, its employees, servants, agents or contractors, or non-compliance with applicable federal, state or county

statutes or rules and regulations; provided, however, that nothing herein shall diminish any other rights or remedies which the Lessor may have in connection with any such negligence, breach or non-compliance. With respect to any other such waste damage or loss, Lessee agrees to indemnify, save the Lessor harmless and, at the option of the Lessor, defend the Lessor from any and all losses, damages, claims, demands or actions caused by, arising out of, or connected with the operations of the Lessee hereunder as more specifically provided under paragraph 16 hereof. Lessee shall not be obligated to defend the Lessor's title to geothermal resources.

11. COMPLIANCE WITH LAWS

Lessee shall comply with all valid requirements of all municipal, state and federal authorities and observe all municipal, state and federal laws and regulations pertaining to the leased lands and Lessee's operations hereunder, now in force or which may hereafter be in force, including, but not limited to, all water and air pollution control laws, and those relating to the environment; provided, however, no revision or repeal of the regulations as defined in paragraph 34 subsequent to the effective date hereof shall change the rental, royalty rate, term, or otherwise substantially change the economic terms under this Lease; provided, further, however, that the State of Hawaii, acting in its governmental capacity, may by such regulations or amendments thereto made at any time regulate the drilling, location, spacing, testing, completion, production, operation, maintenance and abandonment of a well or wells or similar activity

as well as the construction, operation and maintenance of any power plant or other facilities in the exercise of its police powers to protect the public health, welfare and safety as provided in the regulations.

Lessee shall have the right to contest or review, by legal procedures or in such other manner as Lessee may deem suitable, at its own expense, any order, regulation, direction, rule, law, ordinance, or requirement, and if able, may have the same cancelled, removed, revoked, or modified. Such proceeding shall be conducted promptly and shall include, if Lessee so decides, appropriate appeals. Whenever the requirements become final after a contest, Lessee shall diligently comply with the same. Lessee also agrees that in its employment practices hereunder it shall not discriminate against any person based upon race, creed, sex, color, national origin or a physical handicap.

#### 12. INSPECTION OF PREMISES AND RECORDS

Lessor, or persons authorized by the Lessor, shall have the right, at all reasonable times, to go upon the leased lands for the purpose of inspecting the same, for the purpose of maintaining or repairing said premises, for the purpose of placing upon the leased lands any usual or ordinary signs, for fire or police purposes, to protect the premises from any cause whatever, or for purposes of examining and inspecting at all times the operations of Lessee with respect to wells, improvements, machinery, and fixtures used in connection therewith, all without any rebate of charges and without any liability on the part of the Lessor for any loss of occupation or quiet enjoyment of the premises thereby occasioned.

Lessor or its agents may at reasonable times inspect

the books and records of Lessee with respect to matters pertaining to the payment of royalties to Lessor. Complete information shall be made available to Lessor. In addition, qualified representatives and/or consultants designated by Lessor may examine the reports specified in this Lease and all other pertinent data and information regarding wells on the leased lands and production therefrom. In the event of surrender of all or a part of the leased lands Lessee shall furnish Lessor all data with respect to such surrendered lands including interpretations of such data for use in future lease negotiations with third parties. Lessee agrees on written request to furnish copies of such information to Lessor's qualified representatives or consultants.

13. GEOHERMAL OPERATIONS

Lessee shall carry on all work hereunder with due regard for the preservation of the property covered by this Lease and with due regard to the safety and environmental impact of its operations and in accordance with the following terms and conditions:

A. Removal of Derrick. Lessee shall remove the derrick and other equipment and facilities within sixty (60) days after Lessee has ceased making use thereof in its operations.

B. Operating Sites. All permanent operating sites shall be landscaped or fenced so as to screen them from public view to the maximum extent possible, as required in the discretion of the Department of Land and Natural Resources. Such landscaping or fencing shall be approved in advance by the Lessor and kept in good condition.

C. Site Selection. Prior to commencing a particular operation on the surface of the leased lands, Lessee will

consult with the occupier and submit the details concerning the proposed operation, such as the location or route of any drill site, facility site, installation site, surface area, road, pond, pipeline, power line, or transmission line, as the case may be, to the occupier by certified mail for the occupier's approval. If the occupier does not approve such proposal, occupier will submit within thirty (30) days an alternate written proposal. If occupier does not submit an alternate proposal, Lessee may proceed with its operation as originally proposed, subject to the provisions of paragraph 23. If the occupier and Lessee cannot agree, the matter will be submitted to arbitration.

D. Drilling Operations. All drilling and production operations shall be conducted in such manner as to eliminate as far as practicable dust, noise, vibration, or noxious odors. The operating site shall be kept neat, clean and safe. Drilling dust shall be controlled to prevent widespread deposition of dust. Detrimental material deposited on trees and vegetation shall be removed. Lessee will take such steps as may be required to prevent damage to crops. The determination as to what is detrimental will be made by the Lessor.

No well shall be drilled within five hundred (500) feet of any residence or building on the leased lands without first obtaining the occupier's written consent.

In any well drilled by Lessee hereunder sufficient casing shall be set and cemented so as to seal off surface and subsurface waters, any of which would be harmful to agricultural or other operations.

E. Water Quality - Waste Disposal. Lessee shall file with the Lessor a report of any proposed waste discharge.

Wastes shall be discharged in accordance with requirements and prohibitions prescribed by the Lessor. The Lessor and any other state agency having jurisdiction over the affected lands shall also approve the place and manner of such waste disposal.

F. Fish and Game Notice - Interference. Lessee shall communicate with the Division of Fish and Game prior to any operations which may adversely affect fish and wildlife resources. Lessee shall conduct its operations in a manner which will not interfere with the right of the public to fish upon and from the public lands of the State and in the waters thereof or will not preclude the right of the public to use of public lands and waters.

G. Damage to Terrain. Any operations disturbing the soil surface, including road building and construction and movement of heavy equipment in support of or relating to specific geothermal exploration or development activities shall be conducted in such manner as will not result in unreasonable damage to trees and plant cover, soil erosion, or in degradation of waters of the State, including fish and aquatic life habitat. Lessee will conduct its operations in a manner that will not unreasonably interfere with the enjoyment of the leased lands by the occupier or persons residing on or near the leased lands.

H. Pollution. Pollution of the ocean and tidelands, rivers, or other bodies of water, and all impairment of and interference with bathing, fishing, or navigation in the waters of the ocean or any bay or inlet thereof is prohibited, and no brine, minerals, or any refuse of any kind from any well or works shall be permitted to be deposited on or pass into waters of the ocean, any bay or inlet thereof,

rivers, lakes or other bodies of water, without specific written State authorization.

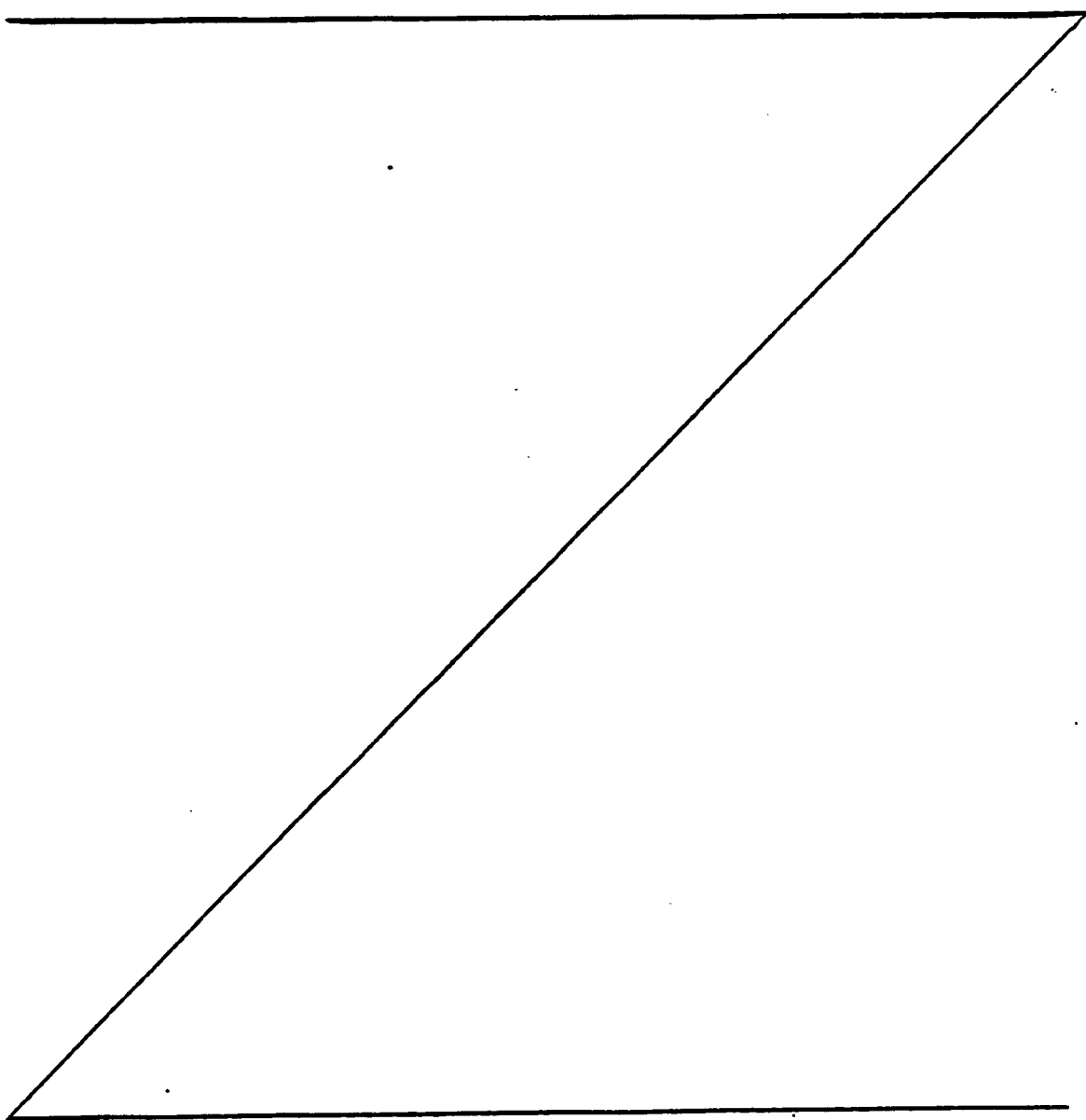
No Leased Substances which may be produced from any well drilled upon the leased lands shall be blown, flowed, or allowed to escape into the open air or on the ground in such a manner as to create a nuisance, which shall specifically include but not be limited to noise, air or other pollution, and other activities which disturb the occupier's or his Tenant's use of the leased lands. Subject to the foregoing, Lessee may bleed Leased Substances to the atmosphere so long as such operations are lawfully and prudently conducted in accordance with good geothermal drilling and production practices and are not otherwise violative of the provisions of this Lease.

I. Filled Lands. No permanent filled lands, piers, platforms, or other fixed or floating structures in, on, or over any tide and submerged lands covered by this Lease or otherwise available to Lessee shall be permitted to be constructed, used, maintained, or operated without obtaining any and all permits required under applicable State and Federal law, rules and regulations, and complying with all valid ordinances of cities and counties applicable to Lessee's operations, and without securing the written permission of the Lessor specifically authorizing the activity.

J. Road Maintenance. Lessee will take such steps at Lessee's own expense as are necessary to insure that its roads, well sites, plant sites and other operation areas will be kept as dust free as is practicable so that dust will not decrease the market value of adjacent growing crops or interfere with the occupier's or his tenant's uses.



Lessee will use existing roads where such are available for its operations. All roads, bridges and culverts used by Lessee will be maintained by it and roads surfaced or treated in a manner that will prevent dust from interfering with agricultural or residential use of the leased lands. Lessee shall be responsible for the maintenance of and repair of damages caused to roads used by Lessee on or serving the leased lands. The occupier and Lessor and their agents, tenants and licensees shall have the full use of roads constructed by Lessee but shall be responsible for the repair of any unusual damage caused to such roads by their use. In constructing roads, Lessee shall install necessary



culverts or bridges so as not to interfere with the irrigation or drainage of the leased lands.

K. Timber Damaged. In the absence of any agreement to the contrary, timber damaged, destroyed, or used on the leased lands shall be compensated for at market value to the surface owner. Borrow pit material shall not be obtained from the leased lands without permission and payment of market value to the surface owner.

L. Improvements - Protection from Damage. Improvements, structures, telephone lines, trails, ditches, pipelines, water developments, fences, crops and other property of the State or surface owners, other lessees or permittees shall be protected from damage and repaired or replaced by Lessee when damaged by Lessee.

M. Damages - Payment. In the event any buildings or personal property or crops shall be damaged or destroyed because of Lessee's operations on the leased lands, then Lessee shall be liable for all damages occasioned thereby. Lessee in its operations on the leased lands shall at all times have due and proper regard for the rights and convenience, and the health, welfare and safety of the occupier and of all tenants and persons lawfully occupying the leased lands. In the event that Lessee's operations result in any condition, including but not limited to water table or deposition of chemicals, or harmful substances, which adversely affects the continued production of crops or then beneficial uses and purposes of the land, occupier at his option may require Lessee to reimburse the occupier, his tenants and persons lawfully occupying the leased lands as to the affected acreage in accordance with subparagraphs N 1 and 2 of this paragraph 13.

N. Damages to Surface or Condition of Land.

Lessee shall pay the surface owner for the surface of each acre of land or fraction thereof utilized, taken or used or rendered substantially unusable by the Lessee in its operations, pursuant to the terms of this Lease, for farming or stock raising operations or other uses or purposes for which the land is then being used or for which the surface owner had made other plans, which shall include, but not be limited to, the lands occupied by drill sites, facility sites, roadways constructed by Lessee, ponds, pipelines, utility lines, power and transmission lines, production facilities, and other facilities and structures, together with other uses of the surface, save and except certain plants and buildings provided for in subparagraph O below, in accordance with one of the following methods to be elected by surface owner.

1. Lessee shall pay the surface owner annually from the date of acquisition a rental equivalent to the fair rental value which is being paid each year for like property.

2. Lessee shall pay surface owner severance damages if any to the surrounding land and purchase the surface acreage required by Lessee for its fair market value with right of surface reverter in the surface owner when no longer utilized by Lessee in its operations.

O. Power Plants. In the event Lessee, or a public utility, pursuant to Lessee's operations hereunder, desires to construct any plant or building site and is required to have fee title for such purpose, then Lessee shall pay occupier the fair market value for the surface of such plant or building site and the severance damages, if any, to the parcel from which such plant or building site is taken.

P. Agreement with Surface Owner. In the event that the Lessor does not own the surface of the leased lands and if the geothermal developer who is responsible for developing the resources on the leased lands enters into a lease with the surface owner, then the provisions of such lease from the surface owner shall supercede the foregoing paragraphs 13.K. through 13.O and 14 relating to surface use, and such paragraphs shall thereafter have no force and effect where it is inconsistent with the lease with the surface owner.

Q. Drilling Mud. Drilling mud shall be ponded in a safe manner and place, and where required by the Lessor, posted with danger signs, and fenced to protect persons, domestic animals, and wildlife. Upon completion of drilling, the mud shall be disposed of, or after drying in place, covered with a protective layer of soil.

Lessee agrees to fence all sump holes and excavations and all other improvements, works, or structures which might interfere with or be detrimental to the activities of the occupier or other adjacent or nearby users of the land, and to build sumps and to take all reasonable measures to prevent pollution of surface or subsurface waters on or in the leased lands. Upon abandonment of any well on the leased lands, or on the termination of this Lease, or upon quitclaim or reverter of any leased land by Lessee, then as to such leased land Lessee shall level and fill all sump holes and excavations shall remove all debris, and shall leave those areas of the leased lands used by Lessee in a clean and sanitary condition suitable for farming or in the condition it was at the inception of this Lease if its use was other than farming, and shall pay the occupier for all damages to occupier's buildings, structures, or other property caused by Lessee.

R. Facility Sites. Areas cleared and graded for drilling and production facility sites shall be kept to a reasonable number and size, and be subject to Lessor's approval.

Unless economic and technological considerations will not permit, wells will be drilled directionally in order to minimize the number of drill sites required. Well sites and facility sites will be shaped and located to the extent practicable to interfere as little as possible with the occupier's operations including the spacing, location and operation of the occupier's improvements, planned and contemplated uses, grading, utility and drainage systems, and roads, and to prevent undue interference or danger to the occupier's or his tenant's farming and other operations. Where economically and technologically feasible, wells shall be drilled directionally from a single well site. Drill sites may also be located on unused portions of the leased lands. The drill sites will not ordinarily exceed five (5) acres in size but will vary in accordance with the number of wells drilled from such site and the amount of production equipment placed thereon. Plant or facility sites will be limited in size to approximately ten (10) acres per site.

S. Construction of Terms. The above are in addition to, and not to be construed as limitations upon, all other rules, regulations, restrictions, mitigation measures and all other measures designed to restrict, limit, modify or minimize the environmental impact of operations carried out pursuant to this Lease as set forth in this Lease.

T. Spacing, Production, Etc. - The Lessor may determine the spacing of wells and the rate of development and production of such wells to prevent the waste of geo-

thermal resources and to promote the maximum economic recovery from, and the conservation of reservoir energy in, each zone or separate underground source of geothermal resources. Such determination shall be based on recognized engineering standards and shall be consistent with prevailing economic and market conditions.

U. Drilling - Notice - Plan - Lessee, before commencing the drilling of a well, shall notify the Lessor of its intention to drill, and such notice shall contain the location and elevation above sea level of derrick, proposed depth, bottom hole location, casing program, proposed completion program and the size and shape of drilling site, excavation and grading planned, and location of existing and proposed access roads. Where the surface of the leased lands is under the jurisdiction of a State agency other than the Department of Land and Natural Resources, Lessee shall provide at the same time such information listed above as is pertinent to that agency.

V. Drilling, etc. - Circulating Medium - All drilling, redrilling, perforating, or work-over operations within the leased lands shall be done with an accepted circulating medium.

W. Generating Plants - Approval - No generating plants, buildings, structures, production equipment, metering systems, pipelines or roads for the production, sale or use of geothermal resources (hereinafter referred to as "geothermal facilities") shall be installed or constructed except on prior Lessor's approval and the approval of any other governmental agency having jurisdiction over such installation or construction. Any contract entered into by Lessee with a Public Utility or any other person or entity for the install-

ation or construction of geothermal facilities shall contain provisions requiring the Public Utility, or other person or entity to obtain the approval of the Lessor and other governmental agencies before installation or construction of geothermal facilities.

14. LIENS

Lessee will not commit or suffer any act or neglect whereby the estate of the Lessor or the surface owner or occupier of the leased lands shall become subject to any attachment, lien, charge or encumbrance whatsoever, and shall indemnify and hold harmless the Lessor, surface owner and occupier, against all such attachments, liens, charges and encumbrances and all expenses resulting from any such act or neglect on the part of the Lessee.

Lessee will, before commencing construction of any improvements or any drilling operations or laying any pipe lines or doing any other work on or within the leased lands, deposit with Lessor, surface owner and occupier of such lands a bond or certificate thereof naming Lessor, said surface owner and occupier as obligees in a penal sum of not less than one hundred per cent (100%) of the cost of such construction, drilling or pipe line work and in form and with surety satisfactory to Lessor, the surface owner and occupier guaranteeing the completion of such work free and clear of all mechanics' and materialmen liens.

15. ASSIGNMENT OR SUBLEASE

Lessee shall have the right to transfer this lease to any person qualified under the applicable law and regulations by assignment, sublease, or other transfer, of any nature including the creation of security interests in Lessee's interest in this Lease and Lessee's rights hereunder,

in whole or in part, and as to all or a part of the leased lands, subject to the approval of the Lessor, which approval will not unreasonably be withheld. Upon approval, Lessor may release the transferor from any liabilities or duties except for any liability or duty which arose prior to such approval.

16. INDEMNITY

The Lessee agrees to hold harmless and indemnify the State of Hawaii and its divisions, departments, agencies, officers, agents and employees, together with the owner or lessee of the surface of the leased lands, if any, from any and all liabilities and claims for damages and/or suits for or by reason of death or injury to any person or damage to property of any kind whatsoever, whether the person or property of Lessee, his agents, employees, contractors, or invitees, or third persons, from any cause or causes whatsoever caused by any occupancy, use, operation or any other activity on the leased lands or its approaches, carried on by the Lessee, his agents, employees, contractors, or invitees, in connection therewith; and the Lessee agrees to indemnify and save harmless the State of Hawaii, the Board, the Chairman, the Department, owner or lessee of the surface if there be one, and their officers, agents, and employees from all liabilities, charges, expenses (including counsel fees) and costs on account of or by reason of any such death or injury, damage, liabilities, claims, suits or losses.

The foregoing indemnity specified in this Lease and in the regulations is not intended to nor shall it be construed to require the Lessee to defend the Lessor's title to geothermal resources and in case of litigation involving the titles of the Lessee and the Lessor, Lessee and the



Lessor will join in defending their respective interests, each bearing the cost of its own defense.

17. LIABILITY INSURANCE

Prior to entry upon the leased lands the Lessee or transferee shall obtain, at its own cost and expense, and maintain in force during the entire term of this Lease, a policy or policies of comprehensive general public liability and property damage insurance from any company licensed to do business in the State of Hawaii covering liability for injuries to persons, wrongful death, and damages to property caused by any occupancy, use, operations or any other activity on leased lands carried on by Lessee or transferee, its agents or contractors in connection therewith, in the following minimum amounts:

- a. Comprehensive General Bodily Injury  
Liability - \$300,000.00 each occurrence,  
\$1,000,000.00 aggregate.
- b. Comprehensive General Property Damage  
\$50,000.00 each occurrence, \$100,000.00  
aggregate.

Liability coverage for injury or damage to persons or property caused by explosion, collapse and underground hazards are to be included prior to initiation of operations to drill a well for geothermal discovery, evaluation or production. Lessee shall evidence such additional coverage to the Chairman prior to initiation of drilling operations. If the land surface and improvements thereon covered by this Lease are owned or leased by a person other than the State of Hawaii, the owner and lessee, if any, of the surface and improvements shall be a named insured. The State of Hawaii,

the Hawaii State Board of Land and Natural Resources, the Chairman of the Board of Land and Natural Resources, and the Department of Land and Natural Resources, shall also be named insureds.

No cancellation provision in any insurance policy shall release the Lessee of the duty to furnish insurance during the term of this Lease. A signed and complete certificate of insurance, containing the special endorsement prescribed in the regulations and indicating the coverage required by this paragraph, shall be submitted to the Chairman prior to entry upon the leased lands. At least thirty (30) days prior to the expiration of any such policy, a signed and complete certificate of insurance, indicating the coverage required by this paragraph, showing that such insurance coverage has been renewed or extended, shall be filed with the Chairman.

18. BOND REQUIREMENTS

The Lessee and every assignee, sublessee or transferee hereof shall file with the Board, a bond in the amount of \$10,000.00 in a form approved by the Board and made payable to the State of Hawaii, conditioned upon faithful performance of all requirements of Chapter 182, Hawaii Revised Statutes, the regulations thereunder and of this Lease, and also conditioned upon full payment by the Lessee of all damages suffered by the occupiers of the leased lands for which Lessee is legally liable. If the Lessee holds more than one (1) geothermal resources mining lease from the State of Hawaii, it may file with the Board, in lieu of separate bonds for each lease, a blanket bond in the amount of \$50,000.00.

the Hawaii State Board of Land and Natural Resources, the Chairman of the Board of Land and Natural Resources, and the Department of Land and Natural Resources, shall also be named insureds.

No cancellation provision in any insurance policy shall release the Lessee of the duty to furnish insurance during the term of this Lease. A signed and complete certificate of insurance, containing the special endorsement prescribed in the regulations and indicating the coverage required by this paragraph, shall be submitted to the Chairman prior to entry upon the leased lands. At least thirty (30) days prior to the expiration of any such policy, a signed and complete certificate of insurance, indicating the coverage required by this paragraph, showing that such insurance coverage has been renewed or extended, shall be filed with the Chairman.

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19. REVOCATION

This Lease may be revoked by the Board if the Lessee fails to pay rentals and/or royalties when due or fails to comply with any of the other terms of this Lease, law, or regulations, or if the Lessee wholly ceases all mining operations for a period of one year without the written consent of the Board for reasons other than force majeure or the production of less than commercial quantities of geothermal resources or by-products. However, before revocation of this Lease for defaults other than the failure to pay rents and/or royalties when due, the Board shall give the Lessee written notice of the claimed default and an opportunity to be heard within thirty(30) days of such notice. The Lessee shall be allowed sixty (60) days to correct such default or, if the default is one that cannot be corrected within sixty (60) days, to commence in good faith and thereafter proceed diligently to correct such default, following written notice of a determination after hearing by the Board that such default exists. Failure to comply with the foregoing shall be deemed sufficient cause for revocation. Defaults arising because of failure to pay rents and/or royalties when due must be cured within sixty (60) days of a written notice of default; otherwise this Lease may be revoked. In the alternative the Lessee may surrender this Lease as hereinafter provided.

Upon the revocation of this Lease, Lessor shall have the right to retain the improvements or require the Lessee to remove the same and restore the leased lands to a similar condition prior to any development or improvements, to the extent reasonably possible and, upon failure by the Lessee to do so, the Lessor may recover the cost thereof,

in addition to imposing any penalties as provided by law or regulations.

20. SURRENDER

If Lessee has complied fully with all the terms, covenants and conditions of this Lease and the Regulations, Lessee may surrender, at any time and from time to time, this Lease in its entirety or with respect to any portion of the land described in this Lease. For the purposes hereof, if there are no deficiencies with respect to the land to be surrendered pertaining to public health, safety, conservation of resources and preservation of the environment, Lessee will be deemed to have complied fully with all of the terms, covenants and conditions of this Lease and the Regulations if Lessee shall have paid all rents and royalties due hereunder and an additional two years' rent for all of the leased lands or, in the event of a partial surrender, two years' rent prorated by reference to that portion of land described in this Lease which is to be surrendered. No deficiencies shall be deemed to exist unless, within sixty (60) days after delivery of the document of surrender, the Lessor has notified the Lessee in writing of any deficiency claimed to exist. If there are no deficiencies as aforesaid, such surrender shall be effective as of the delivery to Lessor of the document of surrender executed by Lessee describing this Lease or that portion of the leased lands which is to be surrendered. If there are claimed deficiencies with respect to the land to be surrendered pertaining to public health, safety, conservation of resources and preservation of the environment at the time of delivery of the document, such surrender shall not become fully effective until such time

as such deficiencies have been corrected or determined not to exist. However, provided that if Lessee corrects such deficiencies within sixty (60) days of notification thereof, or if the deficiencies cannot be corrected within sixty (60) days, commences in good faith and thereafter proceeds diligently to correct such deficiencies, then, in such case, although the surrender shall not be fully effective upon delivery of the document of surrender, the Lessee shall be relieved of any other or further obligations and liability as to this Lease or as to that portion of the leased lands which has been submitted for surrender, whether such liabilities or duties arise out of this Lease or the Regulations, including, without limiting the generality of the foregoing, all obligations to pay rent, to commence mining operations or to be diligent in exploration or development of geothermal resources. During the notification and correction periods above described, this Lease shall not be subject to revocation by the Lessor except for a failure by the Lessee after notification to correct such deficiencies within the time period and in the manner hereinabove described or a breach of the terms of this Lease as to any of the remaining leased lands or rights retained by the Lessee; provided, however, that should Lessee contest the validity of any claimed deficiency, the Lessee's obligation to correct shall be suspended pending appeal to and determination by a court of final jurisdiction. Except as aforesaid, nothing herein contained shall constitute a waiver of any liability or duty the Lessee may have with respect to the land or Lease surrendered as a result of any activity conducted on the leased land or under this Lease prior to such surrender. Upon the surrender of this Lease

as such deficiencies have been corrected or determined not to exist. However, provided that if Lessee corrects such deficiencies within sixty (60) days of notification thereof, or if the deficiencies cannot be corrected within sixty (60) days, commences in good faith and thereafter proceeds diligently to correct such deficiencies, then, in such case, although the surrender shall not be fully effective upon delivery of the document of surrender, the Lessee shall be relieved of any other or further obligations and liability as to this Lease or as to that portion of the leased lands which has been submitted for surrender, whether such liabilities or duties arise out of this Lease or the Regulations, including, without limiting the generality of the foregoing, all obligations to pay rent, to commence mining operations or to be diligent in exploration or development of geothermal resources. During the notification and correction periods above described, this Lease shall not be subject to revocation by the Lessor except for a failure by the Lessee after notification to correct such deficiencies within the time period and in the manner hereinabove described or a breach of the terms of this Lease as to any of the remaining leased lands or rights retained by the Lessee; provided, however, that should Lessee contest the validity of any claimed deficiency, the Lessee's obligation to correct shall be suspended pending appeal to and determination by a court of final jurisdiction. Except as aforesaid, nothing herein contained shall constitute a waiver of any liability or duty the Lessee may have with respect to the land or Lease surrendered as a result of any activity conducted on the leased land or under this Lease prior to such surrender. Upon the surrender of this Lease

as to all or any portion of the land covered thereby, or upon any other termination of this Lease except by revocation, the Lessee shall be entitled to all equipment, buildings, and plants placed in and on the leased lands and the Lessor may require the Lessee to remove the same and restore the premises to a similar condition prior to any development or improvements, to the extent reasonably possible. This Lease may also be surrendered if as a result of a final determination by a court of competent jurisdiction, the Lessee is found to have acquired no rights in or to the minerals on reserved lands, nor the right to exploit the same, pursuant to this Lease, and, in such event, the Lessor shall pay over to the person entitled thereto the rentals, royalties and payments paid to the Lessor pursuant to this Lease.

21. ACCEPTANCE OF RENT AND ROYALTIES NOT A WAIVER

The acceptance of rent or royalties by the Lessor shall not be deemed a waiver of any breach by the Lessee of any term, covenant or condition of this Lease, nor of the Lessor's right to give notice of default and to institute proceedings to cancel this Lease in the manner set out in paragraph 19, and the failure of the Lessor to insist upon strict performance of any such term, covenant or condition, or to exercise any option conferred, in any one or more instances, shall not be construed as a waiver or relinquishment of any such term, covenant, condition or option.

22. EXTENSION OF TIME OF PERFORMANCE

That notwithstanding any provision contained herein to the contrary wherever applicable, the Lessor may for good cause, as determined by the Board, allow additional time beyond the time or times specified herein to the Lessee, in which to comply, observe and perform any of the terms, con-



ditions, and covenants contained herein.

23. NO WARRANTY OF TITLE

The Lessor does not warrant title to the leased lands or the geothermal resources and geothermal by-products which may be discovered thereon; this Lease is issued only under such title as the State of Hawaii may have as of the effective date of this Lease or may thereafter acquire. If the interest owned by the State in the leased lands includes less than the entire interest in the geothermal resources and geothermal by-products, for which royalty is payable, as determined by the courts or otherwise, then the bonus, if any, rentals, royalties and other monetary considerations paid or provided for herein shall be paid to the Lessor only in the proportion which its interest bears to said whole for which royalty is payable, and the Lessor shall be liable to such persons for any prior payments made and adjudged by the courts or otherwise; provided, however, that the Lessor shall not be liable for any damages sustained by the Lessee.

This Lease is issued subject to all existing valid rights at the date hereof and such rights shall not be affected by the issuing of this Lease. In the event the leased lands have been sold by the State, subject to mineral reservation, Lessee agrees to follow such conditions and limitations prescribed by law providing for the State, and persons authorized by the State to drill for, produce and take geothermal resources, and occupy and use so much of the surface of the leased lands as may be required for all purposes reasonably connected therewith. Without limiting the effects of the foregoing, where Lessee is not the surface owner, Lessee agrees that before entering, occupying, or

using any of the surface of the leased lands, for any or all purposes authorized by this Lease, Lessee will first secure the written consent or waiver of the owner of the surface of the leased lands or occupier; second, make payment of the damages to crops or other tangible improvements to the owner thereof; or third, in lieu of either of the foregoing provisions, execute a good and sufficient bond or undertaking, payable to and in an amount specified by the Lessor for the use and benefit of the surface owner or occupier of such land, to secure payment of such damages to the crops or tangible improvements of the surface owner or occupier of said land as may be determined and fixed in an action brought upon the bond or undertaking in a court of competent jurisdiction against the principal and sureties thereon, such bond or undertaking to be in the form and in accordance with the rules and regulations. In the event that the State owns only the mineral resources, this Lease is issued subject to any and all right, title and interest of the purchaser, title holder or owner of the surface of the leased lands, and any successor in interest to any such purchaser, title holder or owner of the leased lands, any other provision in this Lease to the contrary notwithstanding.

24. COMMINGLED PRODUCTION - PLANS - APPROVALS - ACCURACY

Subject to testing the absolute open flow potential of wells, whether on the leased lands or other lands, as set forth in paragraph 5D hereof, geothermal resources from any two or more wells, regardless of whether such wells are located on the leased lands, may be commingled when the metering system used to measure geothermal resources has been approved by the Lessor. Prior to the installation of the metering system, Lessee shall submit for approval a schematic

drawing of the proposed system and specifications of the major equipment components. The Lessor will determine if acceptable standards of accuracy for measuring geothermal resources have been obtained, and may approve commingling of geothermal resources. The metering equipment shall be maintained and operated in such a manner as will meet acceptable standards of accuracy. Use of the equipment shall be discontinued at any time upon determination by the State that standards of measurement accuracy or quality are not being maintained, with such commingling stopped until measurement accuracy has been obtained. In the event that the quality and composition of the geothermal resources to be commingled are substantially different, it shall not be approved by the Lessor until acceptable standards and methods of payments are established. If less than the total flow is to be utilized in a plant or facility, then the reduction in flow for each well shall be in the proportion which the total open flow of each contributing well bears to the total open flows of all contributing wells.

#### 25. SUSPENSION OF OPERATIONS

In the event of any disaster or pollution, or likelihood of either, having or capable of having a detrimental effect on public health, safety, welfare, or the environment caused in any manner or resulting from operations under this Lease, the Lessee shall suspend any testing, drilling and production operations, except those which are corrective, or mitigative, and immediately and promptly notify the Chairman. Such drilling and production operations shall not be resumed until adequate corrective measures have been taken and authorization for resumption of operations has been made by the Chairman.

26. DILIGENT OPERATIONS REQUIRED

The Lessee shall be diligent in the exploration and development of the geothermal resources on the leased lands. Failure to perform diligent operations may subject this Lease to revocation by the Board. Diligent operations mean exploratory or development operations on the leased lands including without limitation geothermal surveys, heat flow measurements, core drilling, or the drilling of a well for discovery, evaluation, or production of geothermal resources.

The provisions hereof shall be construed and applied with reference and in relation to geological and engineering determinations and economic and market conditions with respect to geothermal resources in the area or field in which the leased lands is situated. In the event Lessor believes, based on reasonable cause, that Lessee has failed to perform diligently, Lessee may request a hearing and determination, in accordance with paragraph 19 hereof, of the particulars in which Lessee has failed to conduct diligent operations, and if after such hearing Lessee is found not to be diligent in its operations, then if Lessee does not, within ninety (90) days thereafter, commence and in good faith continue remedying such finding of lack of diligence, Lessor may revoke this Lease as herein provided.

27. PRODUCTION OF BY-PRODUCTS

Lessee shall have no obligation to save or process any geothermal by-products unless such saving or processing, independent of revenues or value received from the production of other geothermal resources, including other geothermal by-products, is economically feasible.

28. RECORDS AND REPORTS

(a) Accounting Data. No later than the twenty-fifth (25th) day of every calendar month following the effective date of this Lease, Lessee shall submit a detailed accounting statement for lease operations specifying all charges paid and credits received under this Lease, including but not limited to information showing the amount of gross revenue derived from all geothermal resources produced, shipped, used or sold and the amount of royalty due. The Lessee shall, at the option of the Lessor, provide more detailed statements and explanatory materials to aid the Lessor in interpreting and evaluating Lessee's accounting statement. All such statements are subject to audit and revision by the Lessor and Lessee agrees that the Lessor may inspect all Lessee's books, records and accounts relating to operations under this Lease, including but not limited to the development, production, sale, use or shipment of geothermal resources at all reasonable times. Any statutory or other rights that Lessee may have to object to such inspection by the Lessor are hereby waived.

(b) Exploration Data. Lessee agrees to supply to the Lessor within thirty (30) days of the completion thereof, or the completion of any recorded portion thereof, all physical and factual exploration results, logs, surveys and any other data in any form resulting from operations under this Lease or from any surveys, tests, or experiments conducted on the leased lands by Lessee or any person or entity acting with the consent of Lessee or with information or data provided by Lessee. Lessee agrees to supply to the Lessor within thirty (30) days of the completion thereof, or

the completion of any recorded portion thereof, the results of all geological, geophysical or chemical tests, experiments, reports and studies, including but not limited to reservoir studies and tests, experiments, reports or studies relating to reinjection or reservoir depletion irrespective of whether the result of such tests, experiments, reports or studies contain sensitive or proprietary or confidential information or trade secrets. Lessee further agrees that any statutory or other rights or objections it may have to prevent disclosure of any such tests, experiments, reports or studies referred to in this paragraph by the Lessor are hereby waived. Notwithstanding any provisions hereof, however, all data and documents supplied by Lessee pursuant to this section shall be deemed to have been "obtained in confidence" and may be disclosed to other persons only with the written consent of Lessee or upon a determination by the Lessor that such disclosure is in the public interest or as otherwise provided by law or regulation.

(c) Waiver by Lessee. Lessee hereby waives any and all rights and objections it may have to prevent an examination of the books and records at reasonable times of any individual, association, or corporation which has transported for, or received from Lessee, any geothermal resources produced from the leased lands. Further, Lessee waives any and all rights and objections it may have to prevent an examination and inspection of the books and records, at reasonable times, of any such individual, association or corporation with respect to such individual's, association's, or corporation's, or to Lessee's operations, wells, improvements, machinery and fixtures used on or in connection with

the leased lands.

Lessee does hereby waive any statutory or other right or objection to prevent disclosure to the Lessor or a duly authorized employee or representative of the Lessor of any information, reports, data, or studies of any kind, filed by Lessee with any public agency, federal, state or local, relating to the leased lands, the geothermal resources thereunder, or any operations carried out in connection with this Lease irrespective of whether such information, reports, data, or studies of any kind contain sensitive or proprietary or confidential information or trade secrets. Any and all such information, reports, data, or studies of any kind filed by Lessee with any public agency, federal, state or local, including all information filed with the Lessor pursuant to any paragraph of this Lease, shall be available at all times for the use of the Lessor or its duly authorized representatives for any purpose. Notwithstanding any provisions hereof, however, any information, reports, data or studies obtained by the Lessor from any public agency and which are not public records shall be deemed to have been "obtained in confidence" and may be disclosed to other persons only with the written consent of Lessee or upon a determination by the Lessor that such disclosure is in the public interest.

29. FORCE MAJEURE

If the Lessee is rendered unable to wholly or in part by force majeure to carry out its obligations under this Lease, Lessee shall give to Lessor prompt written notice of the force majeure. Thereupon, any obligations of the Lessee to perform so far as they are affected by the force majeure shall be suspended during the continuance of

the force majeure and the primary term or any continuation period shall be extended for a period equal to the period of suspended performance caused by the force majeure. Lessee shall use all possible diligence to remove or correct the force majeure, but this shall not require the settlement of strikes, lockouts or other labor difficulties. In no event shall any extension affect the sixty-five (65) year maximum term of this Lease.

30. UNIT OR COOPERATIVE PLANS

The Lessee may, with the written consent of the Board, utilize the leased lands or portions thereof under a unit, cooperative or other plan of development or operation with other State, Federal or privately owned lands for the drilling and production of one or more wells in accordance with Rule No. 3.15 of the Regulations.

31. NOTICES

Pursuant to Rule 8.2 of the Regulations, Lessor may give any notice or deliver any document hereunder to Lessee by mailing the same by registered mail addressed to Lessee at BARWELL GEOTHERMAL CORPORATION, 2828 Paa Street, Suite 2085, Honolulu, Hawaii 96819 or by delivering the same in person to any officer of Lessee. Lessee may give any notice or deliver any document hereunder to Lessor by mailing the same by registered mail addressed to Lessor at DEPARTMENT OF LAND AND NATURAL RESOURCES, P. O. Box 621, Honolulu, Hawaii 96809 or by delivering the same to Lessor in person. For the purposes of this paragraph, either party may change its address by written notice to the other. In case of any notice or document delivered by registered mail, the same shall be deemed delivered when deposited in any United States Post Office,



properly addressed as herein provided, with postage fully prepaid.

32. RESTORATION OF PREMISES

Upon the revocation, surrender or expiration of this Lease, the Lessor or surface owner may require the Lessee to restore the leased lands to their original condition insofar as it is reasonable to do so within ninety (90) days thereof, except for such roads, excavations, alterations or other improvements which may be designated for retention by the surface owner, the Lessor or its agency having jurisdiction over said lands. When determined by the Lessor, surface owner or such State agency, cleared sites and roadways shall be replanted with grass, shrubs, or trees by the Lessee.

33. HEADINGS

The paragraph headings throughout this Lease are for the convenience of the Lessor and the Lessee and are not intended to construe the intent or meaning of any of the provisions thereof.

34. REFERENCE

Unless specifically indicated otherwise, the regulations referred to in and governing this Lease shall be Regulation No. 8 relating to Regulations on Leasing of Geothermal Resources and Drilling for Geothermal Resources in Hawaii approved and adopted by the Board on March 10, 1978, and all terms used herein shall be given the meaning as set out in Rule 1.5 of said Regulation 8.

35. INSOLVENCY

In the event the Lessee at any time during the term hereof is insolvent under any of the provisions of the Federal Bankruptcy Act, or makes a voluntary assignment of his assets for the benefit of creditors, or is adjudged a

bankrupt, either upon Lessee's voluntary petition in bankruptcy, or upon the involuntary petition of Lessee's creditors, or any of them, or should an attachment be levied and permitted to remain for any unreasonable length of time upon or against the interest, rights or privileges of Lessee in or to any geothermal resources produced from the wells drilled by Lessee upon the leased lands, then, upon election by the Lessor, all of the interests, rights, and privileges of Lessee in and to all geothermal resources produced and saved from the leased lands by reason of Lessee's operations thereon, shall terminate upon receipt of written notice from the Lessor advising that the State has so elected. In such event the Lessor shall have, and Lessee, by the acceptance hereof, hereby gives the Lessor the right, option and privilege to cancel and terminate this Lease and all of the terms and provisions granted hereby, and all of the rights and privileges of Lessee in and to or upon the leased lands and in and to any geothermal resources produced and saved from the leased lands by reason of Lessee's operations thereon, and all of Lessee's rights and privileges granted by this Lease shall terminate immediately upon receipt of written notice from the Lessor that the Lessor has so exercised its option.

36. SUBSIDENCE. Any subsidence to the leased or adjacent lands shall be considered pursuant to 7.7 of Regulation 8.

37. WORKMEN'S COMPENSATION INSURANCE

Lessee shall at all times in any and all operations under this Lease and in any and all work in and upon the leased lands carry full and complete Workmen's Compensation Insurance covering all employees.

38. SUCCESSORS

The term "Lessor" herein shall mean and include

Lessor, its legal successors and assigns, and the term "Lessee" herein or any pronoun used in place thereof shall mean and include the masculine or feminine, the singular or plural number, and jointly and severally individuals, firms or corporations, and their and each of their respective heirs, successors, personal representatives and permitted assigns, according to the context hereof.

39. SEVERABILITY

If any provision herein is judicially determined, to be invalid, it shall be considered deleted herefrom and shall not invalidate the remaining provisions.

40. GEOHERMAL OWNERSHIP

If the Lessee hereunder is the surface landowner it is mutually agreed that issuance of this Lease by the Lessor and acceptance thereof by the Lessee shall not be deemed or construed to be a waiver of, and shall be without prejudice to, any claim of ownership to the geothermal resources by the Lessee and Lessor incidental thereto.

41. LEASE TERMS VS. REGULATION 8

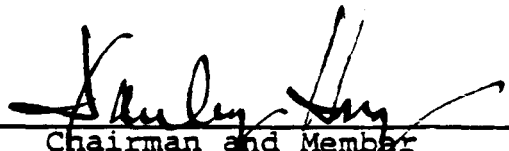
Unless indicated otherwise herein, Regulation 8 shall supersede any of the lease provisions herein which conflicts with said Regulation.

42. APPLICABILITY OF LEASE

This lease is being issued to the Lessee as assignee and holder of the occupier's rights to a mining lease and shall not be applicable to those parcels of lands where the Lessee has not acquired such rights.


IN WITNESS WHEREOF, the parties hereto have caused  
these presents to be executed this 10<sup>th</sup> day of August,  
19 81.

STATE OF HAWAII

By   
Chairman and Member  
Board of Land and  
Natural Resources

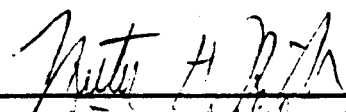
APPROVED BY THE BOARD OF  
LAND AND NATURAL RESOURCES  
AT ITS MEETING HELD ON

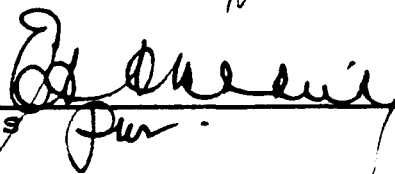
February 13, 1981

By   
Member  
Board of Land and  
Natural Resources

LESSOR

BARNWELL GEOTHERMAL CORPORATION

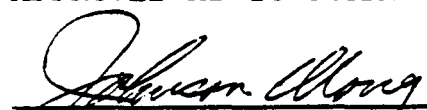
By   
Its Chairman of Board of Directors

By   
Its President

By \_\_\_\_\_  
Its \_\_\_\_\_

LESSEE

APPROVED AS TO FORM:

  
Deputy Attorney General  
Dated: 6/10/81

IN WITNESS WHEREOF, the parties hereto have caused  
these presents to be executed this 10<sup>th</sup> day of August,  
19 81.

STATE OF HAWAII

By

*Kauiy Luy*  
Chairman and Member  
Board of Land and  
Natural Resources

APPROVED BY THE BOARD OF  
LAND AND NATURAL RESOURCES  
AT ITS MEETING HELD ON

February 13, 1981

By

*[Signature]*  
Member  
Board of Land and  
Natural Resources

LESSOR

BARNWELL GEOTHERMAL CORPORATION

By

Its

*Walter H. P. H.*  
*Chairman of Board of Directors*

By

Its

*[Signature]*  
*Pres.*

By

Its

LESSEE

APPROVED AS TO FORM:

*John M. Wong*  
Deputy Attorney General

Dated: 6/10/81

IN WITNESS WHEREOF, the parties hereto have caused  
these presents to be executed this 10<sup>th</sup> day of August,  
19 81.

STATE OF HAWAII

By

*Kaulea King*  
Chairman and Member  
Board of Land and  
Natural Resources

APPROVED BY THE BOARD OF  
LAND AND NATURAL RESOURCES  
AT ITS MEETING HELD ON

February 13, 1981

By

*[Signature]*  
Member  
Board of Land and  
Natural Resources

LESSOR

BARNWELL GEOTHERMAL CORPORATION

By

Its

*Walter H. R. H.*  
*Chairman of Board of Directors*

By

Its

*[Signature]*  
*Pres.*

By

Its

LESSEE

APPROVED AS TO FORM:

*John M. Wong*  
Deputy Attorney General  
Dated: 6/10/81

STATE OF HAWAII

COUNTY OF

)  
) SS  
)

On this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_,  
before me personally appeared \_\_\_\_\_  
and \_\_\_\_\_ to me known to be  
the person(s) described in and who executed the foregoing  
instrument and acknowledged that \_\_\_\_\_ executed the same  
as \_\_\_\_\_ free act and deed.

\_\_\_\_\_  
Notary Public, State of Hawaii

My commission expires: \_\_\_\_\_

STATE OF HAWAII  
*City and*  
COUNTY OF *Honolulu*

)  
) SS  
)

On this 24<sup>th</sup> day of July, 1981,  
before me appeared Morton H. Kingler  
and Ed Caddick, to me personally  
known, who, being by me duly sworn, did say that they are the  
Chairman of the Board and Chief Executive Officer and President  
\_\_\_\_\_, respectively, of Barnwell  
Geothermal Corporation, and that the seal affixed to  
the foregoing instrument is the corporate seal of said cor-  
poration, and that said instrument was signed and sealed on  
behalf of said corporation by authority of its Board of  
Directors, and the said Morton H. Kingler and  
Ed Caddick acknowledged that they executed  
said instrument as the free act and deed of said corporation.

Ruth K. Jankawa  
Notary Public, State of Hawaii

My commission expires: 7-18-83

EXHIBIT A

Lands situate at Kapoho, Kaniahiku, Keahialaka and Pohoiki, Puna, Hawaii, being all of those certain parcels of land (portions of the land described in and covered by:

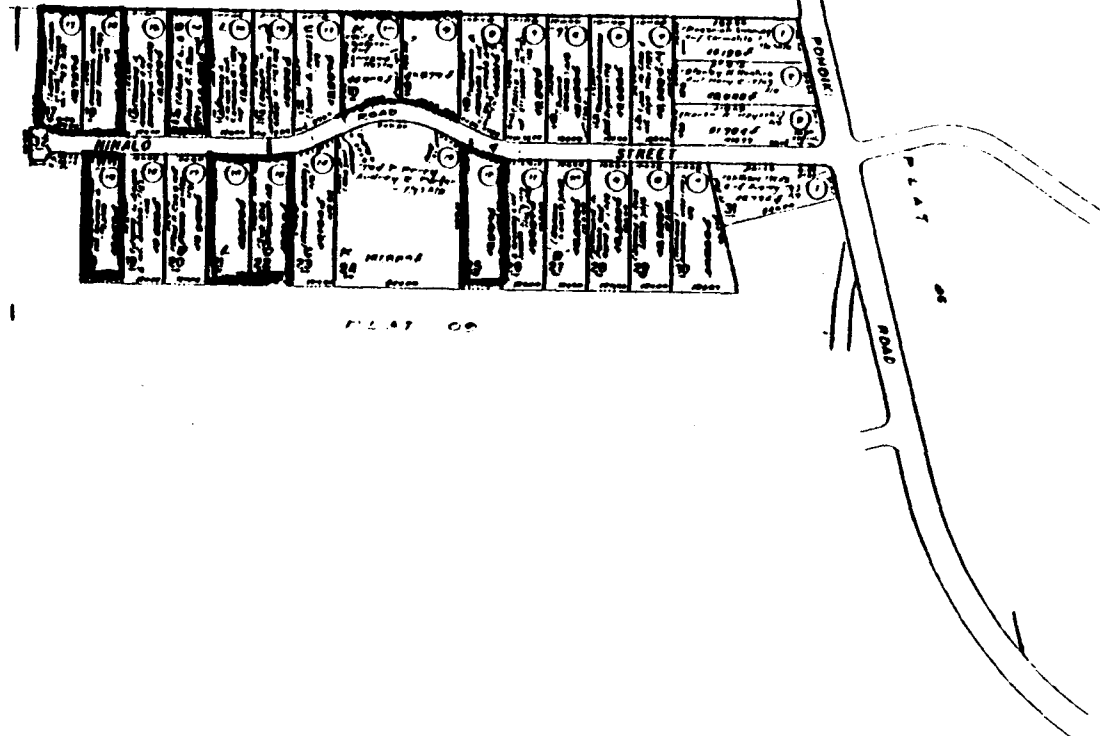
1. Royal Patent 4497, Land Commission Award No. 8559, Apana 5, to C. Kanaina;
2. Royal Patent Grant No. 3209 to Robert Rycroft; and
3. Land Patent No. 8094, Land Commission Award No. 8559-B, Apana 15, to Wm. C. Lunalilo designated by Tax Map Key as follows:

[illegible]



1-3-45 100 0051

LEILANI ESTATES  
P P CTR  
BLOCK 87  
PLAT 88



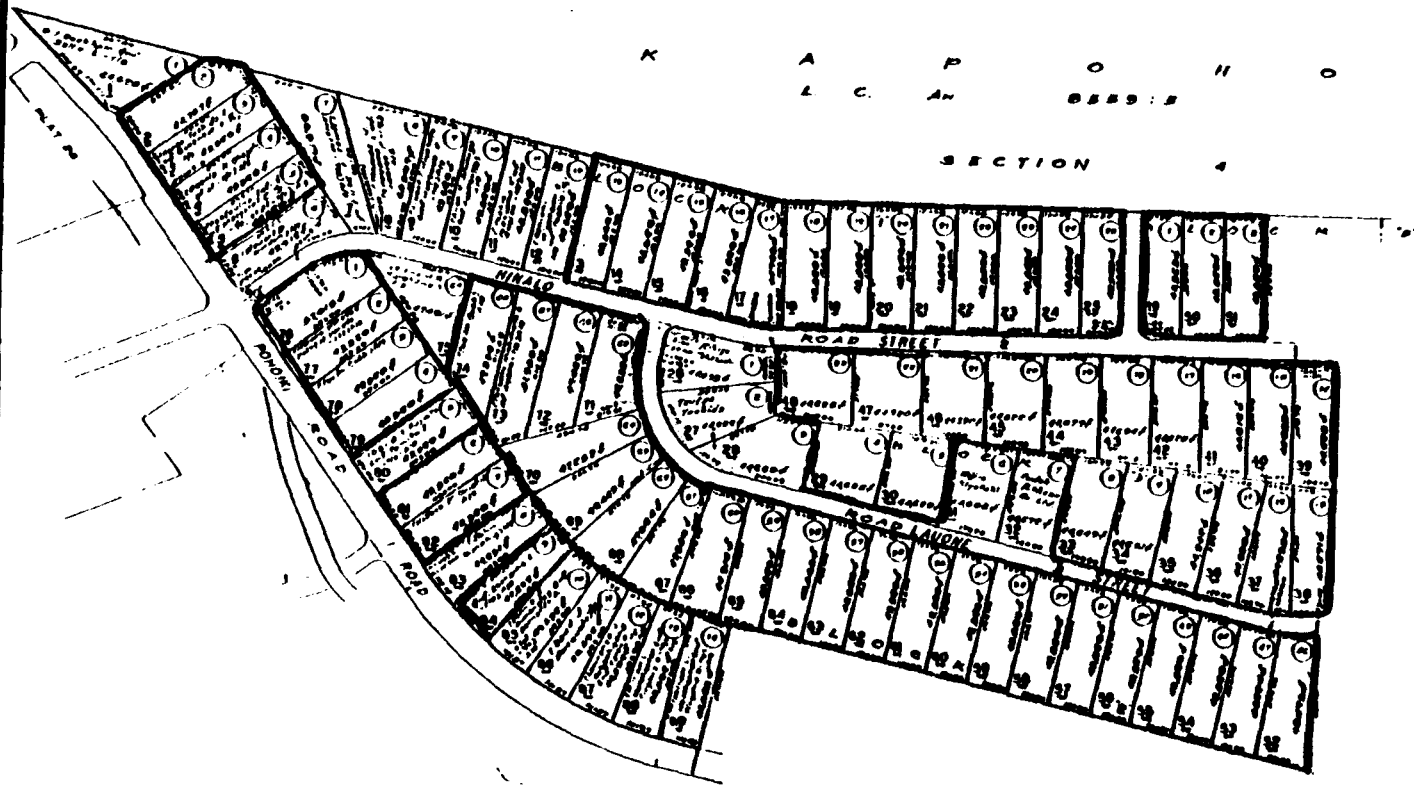
Note: All info must be by 1945-1946  
Development Report and Survey  
showing title  
Note: All assessments are for 1945-1946  
purpose of 1945-1946  
1945-1946 and is otherwise noted

FOR PROPERTY ASSESSMENT PURPOSES  
SUBJECT TO CHANGE

DEPARTMENT OF REVENUE			
PROPERTY TAXES AND OTHER			
TAX MAP BRANCH			
TAX MAP			
TAX MAP BRANCH OFFICE			
NOV	DEC	JAN	
1	3	45	
DATE, 1945 - 1945			

3 231

LANIPUNA GARDENS INCREMENT 1 P. P. 1340 KE AHIALAKA, PUNA, HAWAII (Formerly per 1-3-09)



NOTE: Parcels 15 to 21 not owned by State Dept. to 11d unless otherwise noted  
 NOTE: All lots owned by State Dept. Development, Hawaii, Inc. unless otherwise noted  
 NOTE: All easements are for another purpose & have charges of (10%) unless otherwise noted

3 232

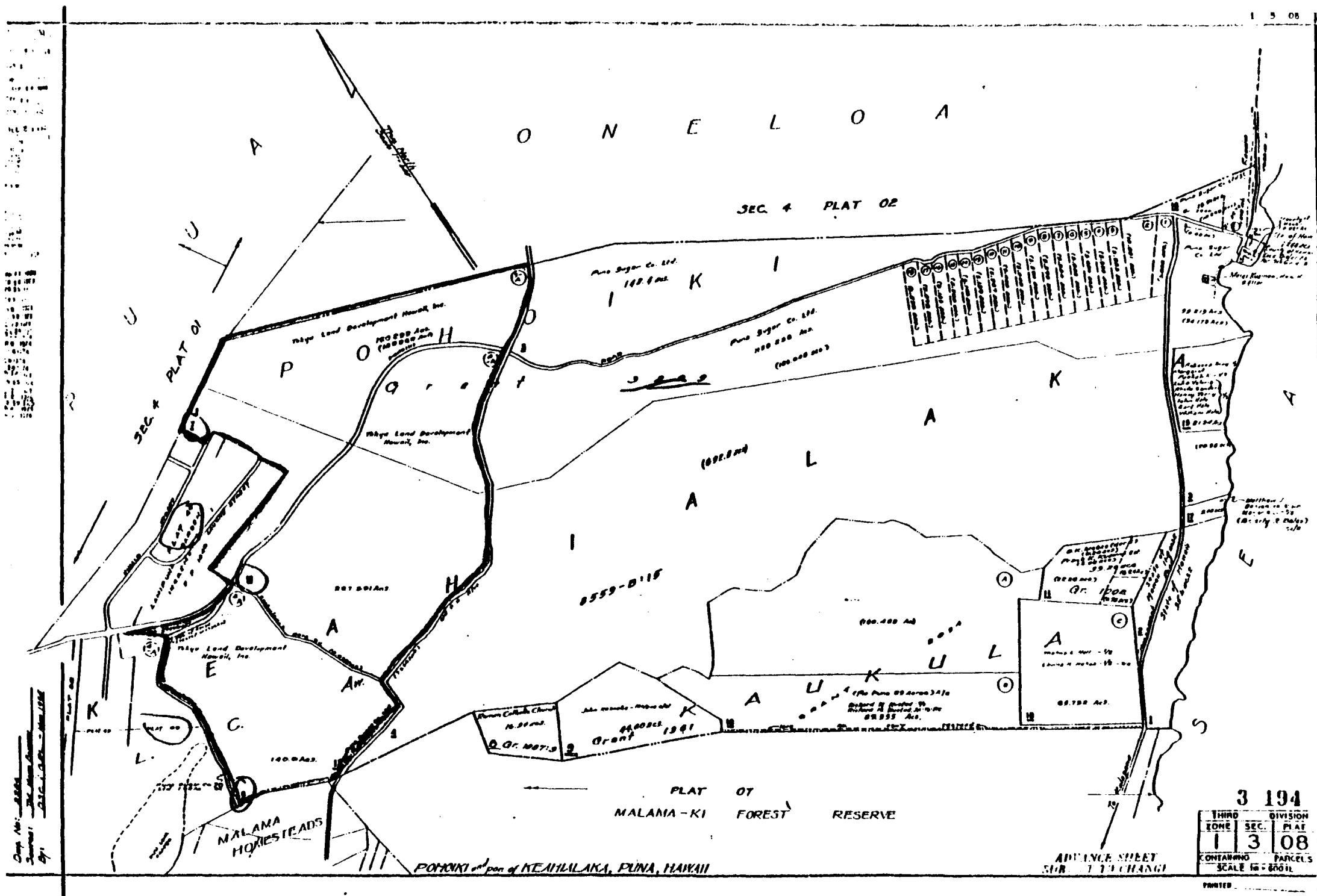
DEPARTMENT OF TAXATION  
 PROPERTY TECHNICAL DIVISION  
 TAX MAPS BRANCH  
 STATE OF HAWAII  
 TAX MAP

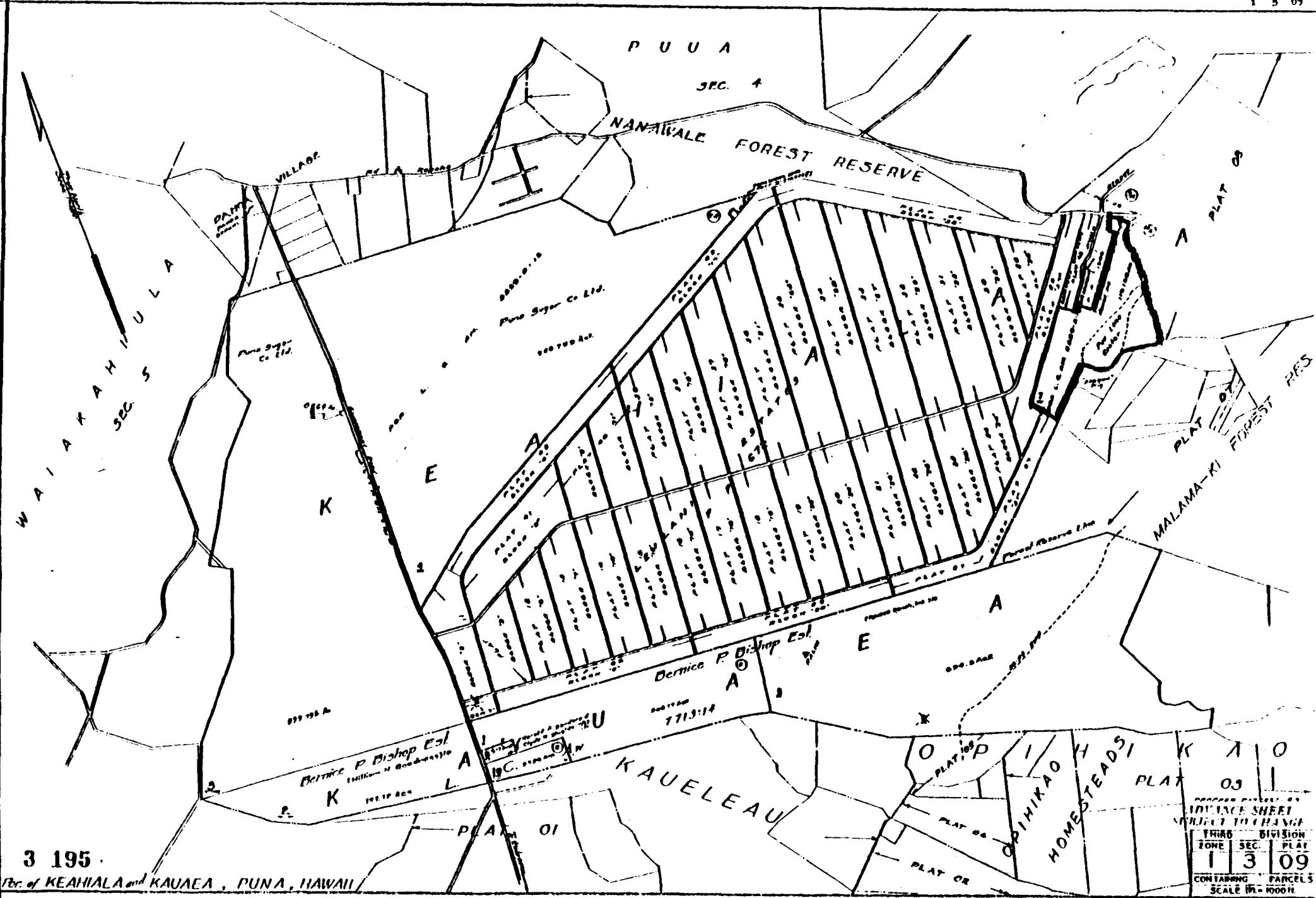
BOOK	PAGE	PLAT
1	3	46

DATE: 1-3-46

FOR PROPERTY ASSESSMENT PURPOSES  
 SUBJECT TO CHANGE

"LANIFUNA GARDENS" INCREMENT 1 P P 1340 KEANIALAKA, PUNA, HAWAII (Formerly per 1-3-00)





3 195  
Tbr. of KEAHIALA and KAUEA, PUNA, HAWAII

PROPOSED PROJECT: 03  
INDUENCE SHEET  
SUBJECT TO CHANGE

THIRD	DIVISION
ZONE	SEC. PLAT
1	3 09

CONTAINING PARCELS  
SCALE 1 IN. = 1000 FT.

PRINTED



FOR REAL PROPERTY TAXATION PURPOSES  
SUBJECT TO CHANGE